

*Journal of*

# **Computational Physics**

*VOLUME 69, 1987*



**ACADEMIC PRESS, INC.**

Harcourt Brace Jovanovich, Publishers

**San Diego Orlando New York Austin Boston**

**London Sydney Tokyo Toronto**

Copyright © 1987 by Academic Press, Inc.  
All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1987 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0021-9991/87 \$3.00

# CONTENTS OF VOLUME 69

NUMBER 1, MARCH 1987

## REVIEW ARTICLE

- JOEL H. FERZIGER. Simulation of Incompressible Turbulent Flows . . . 1

## REGULAR ARTICLES

- SATORU OGAWA AND TOMIKO ISHIGURO. A Method for Computing Flow Fields around Moving Bodies . . . 49
- THOMAS M. HAGSTROM. Boundary Conditions at Outflow for a Problem with Transport and Diffusion . . . 69
- JOHN M. SULLIVAN, JR., DANIEL R. LYNCH, AND KEVIN O'NEILL. Finite Element Simulation of Planar Instabilities during Solidification of an Undercooled Melt . . . 81
- JOHN P. BOYD. Spectral Methods Using Rational Basis Functions on an Infinite Interval . . . 112
- A. NAVARRA. An Application of the Arnoldi's Method to a Geophysical Fluid Dynamics Problem . . . 143
- YU. A. BEREZIN, V. N. KHUDICK, AND M. S. PEKKER. Conservative Finite-Difference Schemes for the Fokker-Planck Equation Not Violating the Law of an Increasing Entropy . . . 163
- E. A. DORFI AND L. O'C. DRURY. Simple Adaptive Grids for 1-D Initial Value Problems . . . 175
- G. N. AFANASIEV. Closed Analytical Expressions for Some Useful Sums and Integrals Involving Legendre Functions . . . 196
- NORMAN EGGERT, MARY JARRATT, AND JOHN LUND. Sinc Function Computation of the Eigenvalues of Sturm-Liouville Problems . . . 209
- J. H. BOLSTAD AND H. B. KELLER. Computation of Anomalous Modes in the Taylor Experiment . . . 230

## NOTES

- J. D. PRYCE. Error Estimation for a Class of Differential Eigenproblems . . . 252
- J. STEPPELER. Energy Conserving Galerkin Finite Element Schemes for the Primitive Equations of Numerical Weather Prediction . . . 258

ANNOUNCEMENT . . . 265

LIST OF FORTHCOMING ARTICLES . . . 266

H. RALPH LEWIS, DANIEL C. BARNES, AND KARL J. MELENDEZ. The Liouville Theorem and Accurate Plasma Simulation . . . . .	267
EDWARD W. LARSEN, J. E. MOREL, AND WARREN F. MILLER, JR. Asymptotic Solutions of Numerical Transport Problems in Optically Thick, Diffusive Regimes . . . . .	283
G. DELIC, E. J. JANSE VAN RENSBURG, AND G. WELKE. A Non-self-adjoint General Matrix Eigenvalue Problem . . . . .	325
ERNEST J. VALEO AND DAVID C. EDER. Numerical Modeling of Lower Hybrid Heating and Current Drive . . . . .	341
NOBUHIRO BABA AND HIDEAKI MIYATA. Higher-Order Accurate Difference Solutions of Vortex Generation from a Circular Cylinder in an Oscillatory Flow . . . . .	362
TAI-YONG LEE AND JOHN H. SEINFELD. Estimation of Two-Phase Petroleum Reservoir Properties by Regularization . . . . .	397
GILLES LABONTÉ. On the Solution of Matrix Equations, Example: Application to Invariant Equations . . . . .	420
ANDREAS KARAGEORGHIS AND GRAEME FAIRWEATHER. The Method of Fundamental Solutions for the Numerical Solution of the Biharmonic Equation . . . . .	434
OLE H. HALD. Approximation of Wiener Integrals . . . . .	460
ROGER GRIMES, HENRY KRAKAUER, JOHN LEWIS, HORST SIMON, AND SU-HAI WEI. The Solution of Large Dense Generalized Eigenvalue Problems on the Cray X-MP/24 with SSD . . . . .	471

NOTE

P. J. SCANLON. An Alternative Form for the Legendre Polynomial Expansion Coefficients . . . . .	482
---	-----

LIST OF FORTHCOMING ARTICLES . . . . .	487
--	-----

AUTHOR INDEX FOR VOLUME 69 . . . . .	488
--------------------------------------	-----